Towards a Community ACTION PLAN
Antibiotic resistance and the Health of Mother Earth
Arturo Quizhpe P, Mary Murray, Kléver Calle H.
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ANTIBIOTIC RESISTANCE AND THE HEALTH OF MOTHER EARTH

ReAct Latinoamérica
Acción frente a la Resistencia a los Antibióticos
Tel: +593 7 2889543
Correo: info@reactlat.org
Sitio web regional: www.reactlat.org
Sitio web global: www.reactgroup.org

International Society to Improve the Use of Medicines
Tel: +61 2 6227 9213
Correo: info@isium.org
Sitio web: www.isium.org

Instituto de Salud Socioambiental
Universidad Nacional de Rosario
Tel: +54 341 4362300 (ext. 2544)
Correo: saludsocioambiental@gmail.com
Dirección: Santa Fe 3100, 2000 - Rosario, Argentina

Escuela Superior de Medicina
Universidad Nacional de Mar del Plata
Correo: despachomedicina@mdp.edu.ar
Dirección: Ayacucho 3537, 87600 - Mar del Plata, Buenos Aires, Argentina

Authors: Arturo Quizhpe P., Mary Murray, Kléver Calle H.
Editing: Arturo Quizhpe P., Mary Murray, Kléver Calle H.
Proofreading: Jasmin Moyano
Review: Celina Hanson, Karin Malmros, Anna Zorzet, Andreas Sandgren, Mengying Ren.
Translation from Spanish to English: Satya Sivaraman

Design and Layouts: El Gato

Cuenca, Ecuador
2021
Mary Murray
Australia

Has worked for over 40 years in the development and implementation of equitable and effective drug policies in Australia, numerous low-income countries and international organizations. She chaired the Ministerial Advisory Committee to develop the Quality Medicines Use Policy (NMP) in Australia. She has collaborated with the Philippines, Vietnam, Samoa and other countries on drug policy development. Under the coordination of the Dag Hammarskjöld Foundation and with other experts, she wrote about the cultural, political, technical and economic forces behind the development of NMP in seven countries. In 2000, she was part of the organization of the first World Assembly for People’s Health in Bangladesh. In 2004, she completed her doctorate in cultural psychology. From 2005 to 2014, she was Network Coordinator of Global ReAct. She is now Chair of the International Society to Improve the Use of Medicines. She is also an artist.

Arturo Quizhpe P.
Ecuador

Ecuadorean physician, professor of pediatrics and former dean of the Faculty of Medical Sciences of the University of Cuenca. Master of Science, specialist in pediatrics, gastroenterology and child nutrition, diploma in school health and child development, postgraduate from the Institute of Pediatrics and Childcare ‘Martago Gesteira’ of the Federal University of Rio de Janeiro, Tel Aviv University and University of London. External researcher at the International Centre for Research and Education in Health Systems, Radboud University, the Netherlands. Professor and guest lecturer at several universities, academic institutions and popular organizations in Latin America, Europe, Asia and Africa. Author of numerous books, research and scientific articles published in various media, languages and countries. Former regional coordinator for South America for the International People’s Health Council, General Coordinator of the 2nd World Assembly on People’s Health and member of the Executive Committee of the People’s Health Movement.

Kléver Calle H.
Ecuador

Ecuadorean social communicator dedicated to health and ecology for 15 years. In 2005, he joined the communication team of the Second World Assembly for People’s Health (Cuenca, Ecuador), organized by the Movement for People’s Health and the Faculty of Medical Sciences of the University of Cuenca. From 2007 to 2014, he was part of the ReAct Latin America team as a communicator, educator, researcher, and coordinator of several initiatives, including Reimagining Resistance, a cooperation project between science and art on bacterial resistance. Founding member of Yasunidos Guapondelig (2013), an Ecuadorean environmental group focused on promoting human rights and the rights of nature. Co-editor and co-author of several publications on bacterial resistance, human health and planetary health.
Upon reaching this stage, the third booklet in the series ‘Communities and Antibiotics’, it is worth making a brief summary of the journey: the first booklet immersed us in the sea of community wisdom for the care of antibiotics and health of Mother Earth. The second took us to meet communities that decided to confront antibiotic resistance and other socio-environmental health problems.

Now, this third booklet, intended for social leaders, health workers, educators, any organization or person dedicated to community service, is a guide to build a community action plan against antibiotic resistance (ABR), from the concept of ‘Mother Earth, One Health.’

The work in this third booklet is organized in two parts: the first shows the progress of the national action plans in Latin America, particularly in the Andean countries, focusing the analysis on the ‘One Health’ approach and social participation; and the second, after explaining the rationale behind the proposal to place national plans in the context of community plans, points the way to move towards a community action plan.

The idea is that the community plan takes the strategic objectives of the global and national plans, and adapts them to the social and environmental reality of each community, so that the communities can take the problem and the solutions into their own hands.

The intention is to activate, commit, and join the communities for the common purpose of safeguarding the effectiveness of antibiotics, of preserving humanity’s capacity to prevent and treat bacterial diseases, using the ‘Mother Earth, One Health’ approach.

The COVID-19 pandemic has starkly shown us that we all live on one planet, that we are one family and that we have to act in concert, at the global, regional, national, local, community and individual levels to overcome the crisis and prevent new pandemics.

It has taught us to maintain local initiatives and to work in unison. To sing with our voices and in our languages a single universal song in the face of the threat of antibiotic resistance. Or, citing the Laicrimpo Popular Health Movement from Argentina, to act on our local ecosystems while taking care of the planetary ecosystem through our community networks. It has taught us that unity in diversity is the only true unity.

We cordially invite social leaders, health workers and community educators to study the contents of this new booklet in the ‘Communities & Antibiotics’ series, to take action, control the fire of antibiotic resistance and take care of Mother Earth’s Health.

*ReAct Latin America uses the terms ‘One Health’ and ‘Mother Earth, One Health’ as equivalent. Globally, the former is used. However, in this series, we prefer the second, because it is culturally more significant for our region.
1. From the global plan to national plans

Five years after the approval of the global action plan on antimicrobial resistance, how far have the Latin American countries progressed in developing their national plans?, how have they advanced? What has happened with two parameters that are essential from ReAct Latin America’s perspective: the ‘One Health’ approach* and social participation? If the problem of bacterial resistance to antibiotics runs through human, animal, plant, and ecosystem health, and we are all involved in the causes and solutions, then it is reasonable that we all be involved in the development and implementation of the action plans. Latin America asks for it.

1.1 The Global Action Plan

At the 68th World Health Assembly (May 2015), Member States adopted a Global Action Plan to contain antimicrobial resistance (AMR), with an emphasis on antibiotic resistance. The purpose of the plan was “to ensure that, while possible, the capacity to treat and prevent infectious diseases with effective and safe medicines that are of guaranteed quality, are used responsibly and are accessible to all who need them continues.”

The document recounts the consultative processes with civil society organizations during the gestation of the global plan on antimicrobial resistance. Although it does not make an assessment of their contributions it implicitly recognizes the importance of social participation in the planning. However, when invoking the participation the whole of society in the containment of AMR, the social participation is limited to the execution of actions:

“... all people - in all sectors and disciplines - must participate in the implementation of the action plan and, in particular, in efforts to preserve the efficacy of antimicrobial drugs through conservation and stewardship programs.”

The plan makes four references to the need to ground the plan in local realities: 1) an appeal to the Member States so that, when developing their national plans, they take into account “governance agreements at national and local level”; 2) a call for member states to encourage the formation of multisectoral coalitions with the ‘One Health’ perspective at the local level; 3) investigate the prevalence

The ‘One Health’ concept recognizes human, animal, plant and environmental health as being deeply interdependent and advocates a common strategy for approaching them.
of pathogenic bacteria at the local level to provide specific therapeutic responses, adopt measures based on reality and monitor progress; 4) promote and monitor the appropriate use of antibiotics at the local level.

The plan has five strategic objectives:

1. Improve society’s awareness and understanding of AMR.
2. Strengthen the knowledge and evidence base through monitoring and research.
3. Reduce the incidence of infectious diseases.
4. Optimize the use of antimicrobial drugs.
5. Promote sustainable investment in new drugs, diagnostic tools, vaccines and other interventions, taking into account the needs of all countries.

1.2 How are action plans going in Latin America?

Member States committed to drawing up their national plans in 2017. However, as of data available on May 31, 2020, in Latin America and the Caribbean, 12 countries were still preparing their plans; 10 had already finished them; 5 had the plan approved by the government; and there was no country that was implementing it.

1.3 How are the plans of the Andean countries going?

As of data available on May 31, 2020, Chile, Colombia, Ecuador and Peru have completed the preparation of their national plans. Venezuela and Bolivia are still working on them. It should be noted that we have not found updated official information on the status of the Bolivian plan. However, what we do know comes from unofficial but highly reliable sources. There is also no information on Bolivia in the WHO (World Health Organization), FAO (UN Food) and OIE (World Organization for Animal Health) databases, which made it difficult to analyze the case of this sister country.

From the point of view of ReAct Latin America, the foundations for the development and implementation of action plans against AMR are a robust conception of the ‘One Health’ approach and based on effective participation of local governments and communities. Therefore, this analysis of the national plans of the Andean countries revolves around these criteria.

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* Antigua y Barbuda, Bahamas, Cuba, Dominica, República Dominicana, Ecuador, Guatemala, Honduras, Nicaragua, Paraguay, Santa Lucía, San Vicente y las Granadinas, Venezuela.
** Belize, Colombia, Ecuador, Granada, Guyana, Haiti, Perú, San Cristóbal y Nieves, Surinam, Trinidad y Tobago.
*** Argentina, Brazil, Chile, Costa Rica, México.

Our main source of information is the WHO-FAO-OIE Global Database on the development and implementation of national plans. This database contains information until June 2019. Ecuador presented its plan in November 2019.

The latest news we have found on the Bolivian Ministry of Health website is from 2017: https://www.minsalud.gob.bo/2289-ministerio-de-salud-proyecta-plan-nacional-de-contencion-a-resistencia-a-los-antimicrobianos However, from unofficial but highly reliable sources, RL A knows that the plan was nearing completion, but was blocked due to the political crisis that erupted at the end of 2019.
<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>STATUS OF PLAN</th>
<th>‘ONE HEALTH’ APPROACH*</th>
<th>INTERSECTORAL STRATEGY</th>
<th>SECTORS/MINISTRIES INVOLVED</th>
<th>PARTICIPATION OF LOCAL GOVERNMENTS AND CIVIL SOCIETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>Plan approved by the government. Reflects the objectives of the Global Action Plan. It includes an operational plan and monitoring mechanisms.</td>
<td>Yes</td>
<td>Yes</td>
<td>Human health/Animal health/Plant health/Environment/Education/Economy.</td>
<td>The scientific societies of microbiology and infectiology are collaborators. Community participation is limited to being targets of awareness campaigns.</td>
</tr>
<tr>
<td>Colombia</td>
<td>Plan finalised.</td>
<td>Yes**</td>
<td>Yes</td>
<td>Human health/Animal health/Plant health/Environment/Education/Sciences.</td>
<td>Scientific societies and businesses provided comments during the gestation of the plan and will eventually be invited to the governance table of the plan. Community participation is limited to being targets of awareness campaigns.</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Plan finalised.</td>
<td>Yes</td>
<td>Yes</td>
<td>Human health/Animal health/Plant health/Environment.</td>
<td>Local governments are in the group implementing the plan, but their role is not specified. Civil society actors include the scientific societies of infectiology and microbiology, professional associations related to health, representatives of the pharmaceutical industry, private health services centers, veterinarians and agricultural producers. The community is conceived only as a target of information on AMR.</td>
</tr>
<tr>
<td>Perú</td>
<td>Plan finalised.</td>
<td>Yes</td>
<td>Yes</td>
<td>Human health/Animal health/Environmental health/Farming/Food production.</td>
<td>It involves local governments. It raises social involvement to generate behavioral changes regarding personal hygiene and disease prevention, including among school-age children and older adults. The community is seen only as a recipient of information.</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Plan under development.</td>
<td>No hay información</td>
<td>Yes</td>
<td>Human health/Animal health.</td>
<td>No information.</td>
</tr>
</tbody>
</table>

* The plans are considered to have a ‘One Health’ approach when they jointly address human, animal, plant and environmental health.
** The Colombian plan does not mention the term ‘One Health’, but it has an intersectoral nature that accounts for it.
**Additional elements**

- **Chile:** Stipulates the formation of an inter-ministerial coordination for the execution of the plan; among its lines of action, it contains for the regulation and control of antibiotics, the surveillance of AMR in human and animal health, and training activities for human and animal health professionals.

One of the great challenges for this Andean country is the massive use of antibiotics in salmon farming. Chile is the world's second largest producer of salmon, after Norway, but the Chilean salmon industry uses 1,400 times more antibiotics per ton of salmon produced than the Norwegian industry.  

- **Colombia:** Proposes the establishment of a governance board, for the implementation of the plan, made up of public entities. Similarly, the Colombian plan encourages alliances between human health, animal health, phytosanitary control and other sectors, in order to send a cross-cutting but unique message about AMR.

- **Ecuador:** The Ecuadorian Plan for the Prevention and Control of Antimicrobial Resistance (2019-2023) plans to carry out a public education campaign aimed at the community, the implementation of an AMR surveillance program in animal health and a program for prevention and control of health care-associated infections.

- **Perú:** The national plan to tackle antimicrobial resistance (2017-2021) suggests incorporation of topics such as personal hygiene and infection prevention into the school curriculum. For human and animal health professionals, it proposes the inclusion of AMR in their training.

- **Venezuela:** It has not yet completed its plan, but the Venezuelan state has reported to the WHO-FAO-OIE that it has established multisectoral working groups. It has launched campaigns, still limited, but targeting the most relevant actors, in order to deepen awareness and understanding of AMR. It has addressed the challenge of training and ensuring continuing education of human health professionals. It currently has a national surveillance system for AMR in the animal world for priority pathogens like zoonotic bacteria.

**Conclusions**

1. All the plans reviewed (Chile, Colombia, Ecuador and Peru) partly address AMR from the ‘One Health’ approach. The main focus is on human health, animal health and food production, with limited development of the theme of environmental health. This is a weakness in the application of the ‘One Health’ approach that affects the containment of AMR.

When developing each of the strategic objectives, there are different degrees of comprehensiveness. For example, Chile is the only country that consi-
ders the issue of providing basic services, such as drinking water and environmental sanitation, to the population.

It is worth noting that all the aforementioned countries plan to frame their national surveillance systems within the ‘One Health’ approach. But as the expert group of the Interagency Coordinating Group on AMR (IACG) warns, for low and middle-income countries, problems arise in the implementing phase because of institutional, technical, financial limitations and lack of qualified personnel. (11)

The formation of multisectoral working groups is commendable. However, the scope and inclusion of sectors/ministries in each country is different. In this sense, Colombia and Chile have been more inclusive, by incorporating the ministries of Economy.

All plans contain educational activities aimed at promoting the understanding of AMR in human, animal and environmental health in professional and community spheres. Chile, Colombia and Peru rightly target primary and secondary school students with educational activities on infection prevention and AMR.

2. Limitations were observed in the conception and scope of social participation activities. The plans indicate that business and academic sectors, and scientific and professional associations participated in its elaboration processes, but there are no allusions to social or community organizations related to the care of water, food, biodiversity or the rights of women. In short, participation was limited to certain sectors, socially recognized or with power.

When plans mention community participation or popular social sectors, they do not consider their participation in planning, but rather in the execution of a previously decided plan. Furthermore, in fact, most plans also do not strongly promote community participation in action. The only country that includes social mobilization as a strategy for infection prevention is Peru.

In short, the plans do not recognize the right to participation by organised peoples’ sectors. According to this conception of participation, the communities and social organizations are only responsible for participating in the execution of the plans. But the problem is that national plans built without the effective participation of communities can be ineffective, due to the gap between the plan and reality, and due to the lack of a process of legitimation and community ownership.

The only two countries that point to local governments in their planning are Peru and Ecuador. However, Ecuador does not define its role. Let us remember that local governments are an essential actor due to their proximity to the communities and because they are the decision-making spaces where organized civil society has the greatest capacity to influence. For ReAct Latin America, a national plan should be born from a participatory process of both the communities and the local governments. And then it should

Reading of microbial stories written by children in a school in Puno, Peru, as part of the International Meeting ‘Minga por la Alforja Educativa’ (2019). Photo: Silvina Alessio/ReAct Latin America.
be the appropriate framework for the gestation of local plans.

1.4 The ‘One Health’ approach and social participation in Latin America

In recent years, scientific knowledge about the interconnections between human, animal, plant and environmental health in the world has increased substantially. For ReAct Latin America, this scientific knowledge is complemented with the knowledge of the native, peasant and common people of Latin American countries that, to different degrees, maintain an integral conception of health. In other words, in Latin America, scientific work and the cultural context can be used jointly to develop national action plans from a very robust ‘One Health’ perspective. This alone should justify a vigorous social participation in the elaboration of the plans.

Secondly, it is clear that any plan requires social participation, because without social participation reality is absent, even more so when we speak of plans with a holistic approach to health. One example, ReAct Latin America has found that some rural communities in Ecuador use chicken manure, most likely contaminated with resistant bacteria, resistance genes and antibiotic residues, as natural fertilizer, without prior treatment to decontaminate it.* We assume that the problem is very widespread in Ecuador, because the routine use of antibiotics in many poultry plants and the sale of chicken manure as fertilizer are common. However, Ecuador’s national plan of action does not take into consideration the investigation of the problem or the development of practical procedures for the decontamination of chicken manure.

Thirdly, the plans require the commitment of social organizations, because only social commitment will make it possible to overcome the obstacles that arise during the implementation of the plans, and sustain them in the medium and long term. Commitment is born and grows when social organizations take ownership of the plan, through full participation that starts in planning and ends in evaluation, when they feel it is theirs because it reflects their realities and proposals. Commitment is the fruit of participation.*

Latin America is a region full of social, grassroots and community movements with a comprehensive view of health and ideal conditions to develop both the ‘One Health’ approach and social participation. Social leaders and health workers at the primary level of care, due to their strategic position in the communities, are able to start and be the supporters of this type of process.

* See ‘Community Responses to Antibiotic Resistance’ (brochure No. 2 of the ‘Communities and Antibiotics’ series).
** The case of Nabón (described in ‘Community Responses to Antibiotic Resistance’) shows us that, a participatory action-research project on antibiotic resistance, among guinea pig producers resulted in the desire to find alternatives to eliminate the use of antibiotics for prophylactic and animal growth promotion purposes.
This part of the booklet is dedicated to outlining a community plan, a fundamental tool to contain AMR in our region. What is presented below is the fruit of a collective process that began four years ago, when ReAct Latin America launched the idea of promoting smart communities in the use of antibiotics. Since those days, the idea has been nourished by dialogue with community leaders, professionals, promoters and health activists, academics, agroecologists, indigenous leaders, researchers, ecologists, artists and educators, in meetings, seminars and workshops held in Argentina, Bolivia, Guatemala and Ecuador. This is how this guide was born.

2.1 Why a community action plan?

The community is the ‘heart of the health system.’ This truth, which countless organizations of health activists around the globe have proclaimed for decades, was not so evident until COVID-19 arrived. In these months, we have seen in real time that if people cannot, do not know or do not want to collaborate, there is no way to control the pandemic.

COVID-19 has made it clear that each person on the planet is important in order to improve health for all, but more than each person - each community, because no person changes on their own. Experience with the novel coronavirus is urging humanity to change its thinking from views that may consider certain people as expendable. In ReAct Latin America we advocate that the community is the heart of the health system i.e. the community takes health in its own hands.

For this reason, ReAct Latin America maintains that it is necessary to go beyond social participation in the elaboration of national plans, but that national plans should also encourage the development of local and community plans. The most accurate indicator of social participation in the development of national plans would be the subsequent development of local and community plans.

However, if the national plans do not stimulate the development of local and community plans, the possibility remains open of following the opposite path: that the communities or localities prepare their plans within the guidelines of the global and national plans. This is the option that this guide booklet explores.

Now, as we have seen in the "Community Responses" booklet, there are communities determined to respond to their needs by deviating from the usual pat-
terns. This is known as ‘positive deviance.’ The term, which is usually applied to individuals, also applies to communities. Therefore, we speak of positive community deviance to refer to communities that have found more imaginative solutions to their problems with similar resources. By deviating positively, communities can devise and develop a successful plan of action to address AMR and care for the health of Mother Earth.

2.2 Purpose and objectives of the community plan

In adapting national plans to community plans, it is important to preserve the ability to prevent and treat infectious diseases in humans, animals, plants and the environment, by forming networks of wise communities in the use of antibiotics and planetary health care. Now, based on community action, the strategic objectives would be the following:

1) Where the global plan says: "improve awareness and understanding of society about AMR", the community plan would say: "sensitize, raise awareness, empower, organize and mobilize the community, through participatory strategies, to prevent and control AMR from the 'Mother Earth, One Health' approach".

2) Where the global plan says: "learn more about antimicrobial resistance, through monitoring and research." The community plan would say: "deepen the knowledge of AMR at the community level, through monitoring, research and analysis, based on participatory methodologies. In parallel, deepen the knowledge of the beneficial functions of microbes in food production in human, animal, plant and planetary health.

3) Where the global plan says: "reduce the incidence of infectious diseases," the community plan would say: "reduce the incidence of prevalent infections in the community progressively, through access to drinking water, a balanced diet, environmental sanitation and health education for the entire population." Then add the following: "ensuring vaccination and controlling infections acquired in health facilities and the spread of resistant bacteria between humans, animals and the environment."

4) Where the global plan says: "optimize the use of antimicrobial drugs", the community plan would say: "optimize the use of antimicrobials, especially in respiratory tract infections, diarrheal diseases and minor skin lesions, under the principle "access for all, excess for no one. And, at the same time, eliminate the use of antibiotics as prophylactics and growth promoters for animals intended for human consumption."

5) Where the global plan says: "promote sustainable investment in new drugs, diagnostic tools, vaccines and other interventions, taking into account the needs of all countries," the community plan would say: "promote participatory budget allocation, in order to meet community needs in medical care, medicines, equipment, monitoring, vaccination, training, recovery of knowledge for health care and other interventions, giving priority to groups and the most vulnerable social sectors."
2.3 Lines of action

We have adapted the strategic objectives to the context of communities in Latin America, but as they stand now, they are still a bit distant from community interests. To bridge this gap, we propose to channel the pursuit of these objectives through seven lines of action that are closer to community interests and to the ‘Mother Earth, One Health’ approach:

1. Use of antibiotics: Antibiotics are the most widely used drugs in the world, the cornerstone of modern medical system. However, to a large extent, they are used unnecessarily in human health, the intensive rearing of animals intended for consumption and agricultural production, which has triggered bacterial resistance and the alteration of the human microbiome. It is urgent to reduce its consumption to what is strictly necessary.

2. Infectious diseases: It all begins with infectious diseases, which in regions such as Latin America, still represent a significant burden for collective health. This line of action is crucial, because if we manage to reduce the incidence of infectious diseases in human and animal health, by direct effect, we will reduce the use of antibiotics correctly or incorrectly prescribed.

3. Water: Access to clean or non-contaminated drinking water is essential to reduce infection and hygiene. However, various segments of the Latin American population lack access to good quality water. Things could get worse, because new human groups run the risk of running out of water in sufficient quality and quantity, due to the destruction and contamination of sources and the increase in population.

4. Food: A good diet is essential to strengthen health, since those that are malnourished are more prone to infection. The lack of access to good quality food in sufficient quantity affects large sectors of the population. Nutrient-poor foods, high in saturated fat, refined sugars, chemicals, and pollutants have gained space in the family diet.

5. Environmental sanitation: Large populations live among pockets of potentially pathogenic microorganisms and infection vectors, due to the absence of sewers and adequate treatment of excreta, sewage and waste. This is another widespread problem in Latin America.

6. Health services: Marginal populations lack access to health services with sufficient personnel, supplies and equipment. In addition, these are usually focused on curative medical care, not on the promotion of prevention and comprehensive health. In the case of indigenous peoples, mainstream health systems are generally unaware or dismissive of the existence of traditional health systems, practices, and conceptions of health.

7. Health education: Knowledge for health care must be deepened at the community level, including enhancing the value of traditional knowledge and separating erroneous beliefs. Scientific knowledge must be understood by communities, especially in relation to infectious diseases, the use of medicines and the health system. Likewise, it is essential to sustain the interconnectedness between human, animal, plant, microbial and environmental health, from the ‘Mother Earth, One Health’ approach.

2.4 How to develop a community action plan, step by step

This short guide to building an action plan against ABR is intended for community leaders, health professionals, teachers or any other community ally willing to take the initiative and transform reality. The steps below follow a logical sequence, but some could be conducted in parallel or, depending on the situation, implemented in a different order.

Step 1. Describe the problem:

Begin by describing the problem of infectious diseases and antibiotic use in the community, based on the experiences, observations and conversations of or within the community. In the case of human health, let’s focus on acute respiratory infections (ARIs), acute diarrheal diseases (ADDs) and skin infections, the most common infectious diseases in our environment. This is a preliminary description, no need to complicate. But if feasible, data on the reality of water, environmental sanitation and health services available in the community would be included.

Step 2. Form a promoter group:

With the preliminary description in hand, discuss the findings, problems and the community plan with possible allies within the community, in order to form a promoter or champion group to start and sustain the process. Talk specifically with the leaders of the committees of health, food production, water, education, etc., so that the group is intersectoral. It should be noted that each new dialogue will enrich the knowledge of the problem and the initial document. This is a collective work, from start to finish.

Step 3. Weave support networks:

Community work is the engine of the plan, but support is needed. Therefore, if not done in previous steps, support networks must be built with organizations and institutions in the region/community. The promoter or champion group must identify what kind of support it needs. Usually, support is needed with research, training and technical training. Then, determine who could provide this support, such as the community health center, the school, the university, a NGO, neighboring community, social organizations, or the local government. Finally, negotiations must be conducted. To illustrate the point, the case of small Argentine populations asked the Institute of Socio-Environmental Health of the National University of Rosario to investigate the effects on their health associated with the use of pesticides in transgenic soybean fields.*

* See ‘Community Responses to Antibiotic Resistance’, booklet 2 of ‘Communities and Antibiotics’.
Step 4. Prepare a community diagnosis:

The objective of the diagnosis is for the community to recognize its reality, both in terms of the positive and the negative. It is, therefore, the community that has to make the diagnosis sincerely and truthfully, and not an external team. Two complementary diagnostic methods and a tool for measuring results are proposed below:

**4.1 Community assembly:** a diagnostic method where the promoter or champion group must organize an assembly with community leaders and the support of an external as facilitator who knows the dynamics of the community. To begin, the assembly must examine the problem of antibiotic resistant infections, the purpose of the community plan and the lines of action. Then, the assembly deliberation is opened to elaborate the diagnosis, based on the lines of action (in Text Box #1, questions are suggested to guide this exercise). The subsequent work of the promoter/champion group will be to select and order the most important data.

**4.2 Baseline:** a diagnostic method where we suggest setting up a participatory action research project* on the knowledge, attitudes and practices of the community, through questionnaires applied to a representative sample of the population. This scan is called a baseline.

4.3 **Indicators:** Finally, with the guidance of experts in the field, a tool select seven quantitative indicators** to compare between ‘before’ and ‘after’ implementation of the plan and, thus, measure its effectiveness in a more pragmatic way:

1. What percentage of community members knows how to prevent and control the spread of infections, from the ‘Mother Earth, One Health’ approach.
2. What would be the source of contamination? How is the quality of soil and water with residues of antibiotics and resistant bacteria suspected in the community?
3. Does the community have public health services? Do they have sufficient infrastructure, equipment and supplies? Are they adapted to the context of the community? Do they work interculturally? Are they integrated efficiently with second and third level services?
4. Antibiotics: For what diseases are they used in human health? In the case of rural communities, are antibiotics used to prevent infections and to promote the growth of food animals? Is contamination of the water and soil with residues of antibiotics and resistant bacteria suspected in the community? What would be the source of contamination?
5. Water: How is the quality of water for human consumption and irrigation, in the case of peasant communities? Are there any infectious diseases, due to poor water quality in our community? Does everyone have access to sufficient water?
6. Health education: Does the community know how to prevent and treat the most common infectious diseases? Do you know how to use antibiotics properly? Do you understand the implications of ABR? Are you aware of the interrelationship between human, animal, plant and environmental health? Are you aware that the social, economic and political structure affects the state of health?
7. Infectious diseases: What are the most common infectious diseases in the households in the community? Are there any infectious diseases resistant to treatment? Are there any infections known to be associated with health care facilities?

*The purpose of participatory action research is to know reality in order to transform it, with community participation as the central axis. Community epidemiology could also be used with professional support, the community collects data on its health and diseases. For these methods to work, external agents have to free themselves from any attitude that tries to subordinate the community.

**Quantitative indicators measure the impact of the plan with numbers; qualitative indicators look at the quality of the impact.

**Questions that could be raised in the assembly:**

1. Antibiotics: For what diseases are they used in human health? In the case of rural communities, are antibiotics used to prevent infections and to promote the growth of food animals? Is contamination of the water and soil with residues of antibiotics and resistant bacteria suspected in the community? What would be the source of contamination?

2. Infectious diseases: What are the most common infectious diseases in the households in the community? Are there any infectious diseases resistant to treatment? Are there any infections known to be associated with health care facilities?

3. Water: How is the quality of water for human consumption and irrigation, in the case of peasant communities? Are there any infectious diseases, due to poor water quality in our community? Does everyone have access to sufficient water?


5. Environmental sanitation: What happens to sewage, excreta and waste? Where and how are they disposed of? Are they given any treatment? Is the treatment appropriate?

6. Health services: Does the community have public health services? Do they have sufficient infrastructure, staff, equipment and supplies? Are they adapted to the context of the community? Do they visit families at home? Do they contribute to the health education of the community? Do they work interculturally? Are they integrated efficiently with second and third level services?

7. Health education: Does the community know how to prevent and treat the most common infectious diseases? Do you know how to use antibiotics properly? Do you understand the implications of ABR? Are you aware of the interrelationship between human, animal, plant and environmental health? Are you aware that the social, economic and political structure affects the state of health?

*See the case study from Ecuador in ‘Community Responses’.

** See the case study from Thailand, called ‘Smart Use of Antibiotics’ in the second booklet in this series, ‘Community Responses’.
tious diseases in humans, at the community level, before and after the action plan?

2. In the case of rural communities, what percentage of community members knows how to prevent and control the spread of infectious diseases in animals, before and after the plan?

3. What percentage of community members knows that safe drinking water is critical to reducing the incidence of infectious diseases, at the community level, before and after the plan?

4. What percentage of community members knows that proper excreta disposal is critical to prevent the spread of infectious diseases, at the community level, before and after the plan?

5. What percentage of community members knows what bacterial resistance to antibiotic is, what impact it has on human health and how it emerges and spreads, before and after the plan?

6. What percentage of community members knows what antibiotics are, what they are used for in human medicine, before and after the plan?

7. In the case of rural communities, what percentage of community members knows what antibiotics are used for and how they should be used in veterinary medicine, before and after the plan?

Step 5.
Plan the intervention measures:

The intervention should set in motion the seven lines of action highlighted above (use of antibiotics, infectious diseases, water, food, environmental sanitation, health services and health education). Therefore, at this point, based on the community diagnosis, the promoting or champion group will set goals and actions to achieve them, as well as assigning those responsible for ensuring the actions are completed. An example is provided in the contiguous table.

In this planning exercise, the actions that are being planned or developed should be incorporated, from the health, water, education, food production committees, etc. For this reason, the participation of the leaders of the existing committees in the community is strategic.

After the previous planning, each of the responsible groups will have to draw up specific plans for their respective actions, detailing additional elements such as collaborators, activities, times, resources and budget. An example is provided in the next tables.

As you advance in the planning, you will notice that there is a common denominator in all the lines of action, even those related to infrastructures such as educational programs, that groups all educational activities around community awareness and knowledge.

Starting from the previously drawn baseline, the team in charge of the action research should build the educational program, in dialogue with the promoter group and other representative members of the community. Remember, the baseline shows the knowledge and practices that must be valued, but also the gaps and errors of the community.

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*The use of medicinal plants must be substantiated. This book is a well-substantiated tool (only in Spanish): ‘Enfoque sustentable de enfermedades infecciosas comunes: uso adecuado de antibióticos y plantas medicinales’, of the Andean University Simón Bolívar, Ecuador. Venue and y the University of British Columbia. Available at: https://reactlat.org/download/enfoque-sustentable-de-enfermedades-infectiosas-comunes-uso-adequado-de-antibioticos-y-plantas-medicinales/
To undertake this work, we recommend reviewing “To care for the flower of health” (last booklet in this series), since it offers an educational program on human, animal and environmental health, under the approach “Mother Earth, One Health.” It encompasses the most common infectious diseases, the use of antibiotics, bacterial resistance, the microbiome and diet. And it can be tailored to the particular needs of communities.*

To close this section, we would like to go back to the seven lines of action, because although education is the beginning of everything, not everything changes with education: we must move from education to organization and political advocacy, in order to transform objective realities such as drinking water coverage, environmental sanitation and health services. Finally, the plan, including the educational program, has to be presented and approved at a new community assembly.

**Step 6. Implement intervention measures:**

This stage of the plan starts with the negotiation of collaborations and resources. The promoting group and those in charge of the actions will have to turn to previously identified allies to solidify their support. We recommend starting to develop planning for the educational program, the engine that sets reality into motion.

Throughout the implementation of the plan, progress and difficulties must be monitored. It would be advisable for the promoting group to meet periodically with those responsible for each of the stipulated actions, to give them the support and due follow-up. Obligatory, you must also submit periodic reports to the community assembly to correct or rectify errors when reality surprises them with unforeseen events along the way.

**Step 7. Evaluate the process:**

To evaluate, let us return to the tools referred to in the diagnosis, in this order:

7.1 **Evaluation:** the allied research group must rerun the questionnaires to the people who participated in the training, at least 6 months after the educational program ended. Once the data is processed and compared to the baseline data, we will have a more accurate notion of the impact the program had. This information has to be analyzed, to then arrive at the conclusions and recommendations.

7.2 **Indicators:** with the help of experts, updated data should be collected on the pre-established indicators in the diagnosis phase (for more details, refer to 4.3). These data are crucial, because they show the effectiveness of the plan to contain antibiotic resistance.

7.3 **Community assembly:** the promoting group must organize a new assembly with community leaders, to present the results and analyze them collectively.

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* The case of Ecuador can also be reviewed in the brochure “Community Responses to Antibiotic Resistance.”

Lucas Alonso, researcher at the Environmental Chemistry Group of the Center for Environmental Research (CIM) of the National University of La Plata (Argentina), investigates the presence of antibiotics in water bodies and soils. The Group collaborates with communities. Photo: Damian Marino.
The numbers deserve attention, but there are other types of results: the ideas that emerged along the way, the new friendships, the enthusiasm to continue. All these aspects and others must be taken into account to fully evaluate the process. Finally, remember, the successes and mistakes that may have been made are learning opportunities for new experiences or to share with sister communities.

**Step 8. Celebrate the collective work:**

In our community world, cycles have to be closed and achievements to be recognised, thanked and celebrated. It is like preparing the ground for the next cycle on the path of human and planetary health. Everyone should feel included. All are invited to the celebratory act.

**Step 9. Share and build networks:**

Community life would not be such if the acquired knowledge and actions were not shared. Knowledge, like seeds, has to be spread for a very practical reason: containment of antibiotic resistance and certain related decisions go beyond the local. They have to do with national, regional and even global realities. And to influence them, it is necessary to form community networks. As we said in the introduction to the first booklet in the series, we dream of a world free from untreatable infections, built from communities.
Referencias

2. Ibid, paragraph 27.
3. Ibid, paragraph 21, numeral 1.
4. Ibid, paragraph 21, numeral 1.
5. Ibid, paragraph 49.
6. Ibid, paragraph 32, first paragraph.
9. Ibid.
A Wise and Intelligent Community is one that respects, observes and learns from the vital processes in the soil, air, water and the ecosystem to which it belongs. It feels the invisible world (microorganisms) that keeps these elements healthy. It understands and announces that diversity in all aspects is essential for life and survival. It preserves ancestral knowledge, that of the family and the community, and is prepared for dialogue with any kind of knowledge, that fosters harmonious coexistence with all other beings. It listens, values and is guided by the wisdom and voices of its people. It makes use of all these elements and processes to diagnose, respond, prevent and deal with poor health and respond effectively to new phenomena, such as bacterial resistance to antibiotics.